

# PATENT ABSTRACTS OF JAPAN

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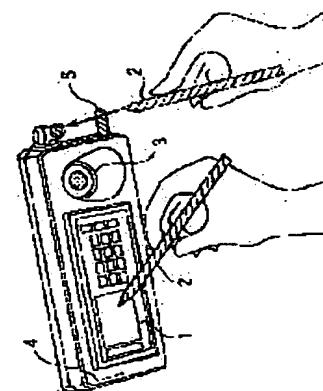
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## (54) PERSONAL COMMUNICATION EQUIPMENT

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a personal communication equipment in which an antenna and an input pen are used in common, the number of components is reduced, the casing is made small and missing of the input pen is prevented.

**SOLUTION:** The personal communication equipment sending/receiving voice data in a radio wave has a tablet 1, an antenna 2 for transmission reception and a transmission reception fixed antenna 5 and an antenna changeover switch 3 selecting the transmission reception



contained antenna 2 or the transmission reception fixed antenna 5 and the transmission reception contained antenna 2 is used for a pen to input to the tablet 1.

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**CLAIMS**

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**[Claim(s)]**

[Claim 1] The personal communication device characterized by the ability to use also as a pen which is equipped with a LCD one apparatus transparency tablet, is formed in the location where a body is suitable possible [ receipt ], and possesses the dismountable antenna for transmission and reception which can be contained from said body in the personal communication device which can transmit and receive voice data on radio, and said antenna which can be contained inputs into said tablet.

[Claim 2] The personal communication device according to claim 1 characterized by having the antenna circuit changing switch which chooses the fixed antenna for fixed transmission and reception, or this fixed antenna and the antenna which can be contained.

[Claim 3] The personal communication device according to claim 2 characterized by having the 1st antenna circuit changing switch (receive section) which is prepared in a receiving side and chooses the one where the output of the amplifying circuit of the antenna which can be contained, and a fixed antenna is higher with an external-control signal, and the 2nd antenna circuit changing switch (receive section) which chooses said antenna which it was prepared in the transmitting side and chosen by the receiving side.

[Claim 4] The personal communication device according to claim 2 characterized by constituting a fixed antenna from a reverse F antenna.

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[Translation done.]

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## DETAILED DESCRIPTION

### [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the transceiver technique of the personal communication device which can transmit and receive voice data on radio.

[0002]

[Description of the Prior Art] Drawing 5 is the external view of "Simon" which is the product put on the market from IBM, and in drawing 5, 1 is the I/O one apparatus transparency tablet put on the LCD screen, and can be operated with a pen. 3, the loudspeaker for a voice call in respectively 4 and a microphone, the pen for a tablet input in 15, and 16 are the whip antennas for transmission and reception which can be contained. Said whip antenna 16 for transmission and reception which can be contained is the only antenna, and is always used for transmission and reception. Said whip antenna 15 for transmission and reception which can be contained was made into the expanding location, receiving sensibility is [ way ] high and its send efficiency is high. Moreover, there is a stopper in the soffit of said whip antenna 16 for transmission and reception which can be accepted, and the further expanding is prevented when an antenna is elongated thoroughly. A user is touching a tablet 1 with the attached pen 15, and performs an entry of data, edit, and directions.

[0003]

[Problem(s) to be Solved by the Invention] The conventional personal communication device had the trouble that possibility of losing a pen 15 was high, when the storage space of a long object called an antenna 16 and a pen 15 was separately needed, since it was constituted as mentioned above.

[0004] It is made in order that this invention may solve the above troubles, and it aims at offering the personal communication device which can make an antenna and a pen serve a double purpose.

[0005]

[Means for Solving the Problem] The personal communication device concerning invention of claim 1 is equipped with a LCD one apparatus transparency tablet, in the personal communication device which can transmit and receive voice data on radio, it is prepared in the location where a body is suitable possible [ receipt ], and it possesses from a body the dismountable antenna for transmission and reception which can be contained, and is characterized by the ability to use also as a pen which the antenna which can be contained inputs into a tablet.

[0006] The personal communication device concerning invention of claim 2 is characterized by having the antenna circuit changing switch which chooses the fixed antenna for fixed transmission and reception, or this fixed antenna and the antenna which can be contained in a personal communication device according to claim 1.

[0007] The personal communication device concerning invention of claim 3 is characterized by having the 1st antenna circuit changing switch (receive section) which is prepared in a receiving side and chooses the one where the output of the amplifying circuit of the antenna which can be contained, and a fixed antenna is higher with an external-control signal, and the 2nd antenna circuit changing switch (receive section) which chooses said antenna which it was prepared in the transmitting side and chosen by the receiving side in a personal communication device according to claim 2.

[0008] The personal communication device concerning invention of claim 4 is characterized by constituting a fixed antenna from a reverse F antenna in a personal communication device according to claim 2.

[0009]

### [Embodiment of the Invention]

The gestalt 1 of implementation of this invention is explained about drawing below gestalt 1. of operation. In drawing 1, 1 is the I/O one apparatus transparency tablet put on the LCD screen, and the loudspeaker for [ 2 ] a voice call in respectively the antenna for a pen-cum-transmission and reception for an input which can be contained, and 3 and 4, a microphone, and 5 are the fixed antennas for transmission and reception.

[0010] Drawing 2 is structural drawing (sectional view) of said antenna 2 which can be contained neighborhood for a pen-cum-transmission and reception for an input, and is set to drawing. 6 dielectric tubing and 8 for the body of a personal communication device, and 7 The central conductor section of the antenna 2 for a pen-cum-transmission and reception which can be contained, the inside in which the insulating sleeve of the antenna 2 for a pen-cum-transmission and reception which can be contained, and 10 draw a part for the electrical conductivity edge of the antenna 2 for a pen-cum-transmission and reception which can be contained in the Dupleix

filter, and, as for 11, 9 draws a signal — a conductor and 12 — a part for the electrical conductivity edge 10 — the inside — it is a conductive flat spring for contacting a conductor 11. The amount of [ 10 ] electrical conductivity edge prevents that an antenna is extended further, when an antenna is lengthened thoroughly, since the connection for the antenna 2 for a pen-cum-transmission and reception which can be contained, and the electrical conductivity edge 10 is a screw type, an antenna lengthens thoroughly — having — a part for the electrical conductivity edge 10 — the inside — when contacted and fixed to a conductor 11, the antenna 2 for a pen-cum-transmission and reception which can be contained can be removed from a part for the electrical conductivity edge 10. a center — the part which becomes the head of a conductor 8, i.e., a nib, consists of construction material which does not have flaw attachment \*\*\*\* in the transparence electric conduction film of the front face of a tablet 1, for example, Duracon.

[0011] Drawing 3 is the block diagram of the antenna selection section of a transceiver circuit. The signal received with the antenna 2 for a pen-cum-transmission and reception which can be contained, and the fixed antenna 5 for transmission and reception is contained, and the fixed amplifying circuits 12 and 13, respectively. In changeover switch (receive section) 14a which is the 1st circuit changing switch, the one where the level of the output of these amplifying circuits 12 and 13 is chosen with an external-control signal. In order to choose the antenna which also chose the transmitting side by the receiving side by changeover switch (transmitting side) 14b which is the 2nd circuit changing switch at this time, even when the antenna 2 for a pen-cum-transmission and reception which can be contained is removed, the receiving side by changeover switch falls, and since the antenna changeover switches 14a and 14b choose the fixed antenna 5, they can be transmitted and received.

[0012] According to the gestalt of this operation, an antenna and an input pen can be made to serve a double purpose, and the cutback of the number of components, the miniaturization of a case, and loss of an input pen can be prevented. Moreover, even when the antenna 2 for a pen-cum-transmission and reception which can be contained is removed, it can transmit and receive by choosing the fixed antenna 5.

[0013] Although the gestalt 2. implementation of operation explained the case of an external antenna as a fixed antenna 5, as shown in drawing 4, a fixed antenna may be for example, a reverse F antenna with built-in equipment. Since it can receive both a vertical wave and a level wave by high interest profit, while the user is removing and operating the antenna 2 for an input which can be contained [ a pen-cum- ], even if a reverse F

antenna is level in this personal communication device, it can perform good transmission and reception.

[0014]

[Effect of the Invention] By making an antenna and the pen for an input make it serve a double purpose, the personal communication device in this invention can reduce the number of components, and can attain the miniaturization of a case simultaneously. Moreover, there is effectiveness which prevents loss of the pen for an input.

[Translation done.]

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**PRIOR ART**

[Description of the Prior Art] Drawing 5 is the external view of "Simon" which is the product put on the market from IBM, and in drawing 5 , 1 is the I/O one apparatus transparency tablet put on the LCD screen, and can be operated with a pen. 3, the loudspeaker for a voice call in respectively 4 and a microphone, the pen for a tablet input in 15, and 16 are the whip antennas for transmission and reception which can be contained. Said whip antenna 16 for transmission and reception which can be contained is the only antenna, and is always used for transmission and reception. Said whip antenna 15 for transmission and reception which can be contained was made into the expanding location, receiving sensibility is [ way ] high and its send efficiency is high. Moreover, there is a stopper in the soffit of said whip antenna 16 for transmission and reception which can be accepted, and the further expanding is prevented when an antenna is elongated thoroughly. A user is touching a tablet 1 with the attached pen 15, and performs an entry of data, edit, and directions.

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**TECHNICAL FIELD**

[Field of the Invention] This invention relates to the transceiver technique of the personal communication device which can transmit and receive voice data on radio.

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**EFFECT OF THE INVENTION**

[Effect of the Invention] By making an antenna and the pen for an input make it serve a double purpose, the personal communication device in this invention can reduce the number of components, and can attain the miniaturization of a case simultaneously. Moreover, there is effectiveness which prevents loss of the pen for an input.

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**TECHNICAL PROBLEM**

[Problem(s) to be Solved by the Invention] The conventional personal communication device had the trouble that possibility of losing a pen 15 was high, when the storage space of a long object called an antenna 16 and a pen 15 was separately needed, since it was constituted as mentioned above. [0004] It is made in order that this invention may solve the above troubles, and it aims at offering the personal communication device which can make an antenna and a pen serve a double purpose.

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**MEANS**

[Means for Solving the Problem] The personal communication device concerning invention of claim 1 is equipped with a LCD one apparatus transparency tablet, in the personal communication device which can transmit and receive voice data on radio, it is prepared in the location where a body is suitable possible [receipt], and it possesses from a body the dismountable antenna for transmission and reception which can be contained, and is characterized by the ability to use also as a pen which the antenna which can be contained inputs into a tablet.

[0006] The personal communication device concerning invention of claim 2 is characterized by having the antenna circuit changing switch which chooses the fixed antenna for fixed transmission and reception, or this fixed antenna and the antenna which can be contained in a personal communication device according to claim 1.

[0007] The personal communication device concerning invention of claim 3 is characterized by having the 1st antenna circuit changing switch (receive section) which is prepared in a receiving side and chooses the one where the output of the amplifying circuit of the antenna which can be contained, and a fixed antenna is higher with an external-control signal, and the 2nd antenna circuit changing switch (receive section) which chooses said antenna which it was prepared in the transmitting side and chosen by the receiving side in a personal communication device according to claim 2.

[0008] The personal communication device concerning invention of claim 4 is characterized by constituting a fixed antenna from a reverse F antenna in a personal communication device according to claim 2.

[0009]

**[Embodiment of the Invention]**

The gestalt 1 of implementation of this invention is explained about drawing below gestalt 1. of operation. In drawing 1, 1 is the I/O one apparatus transparency tablet put on the LCD screen, and the loudspeaker for [2] a

voice call in respectively the antenna for a pen-cum-transmission and reception for an input which can be contained, and 3 and 4, a microphone, and 5 are the fixed antennas for transmission and reception.  
[0010] Drawing 2 is structural drawing (sectional view) of said antenna 2 which can be contained neighborhood for a pen-cum-transmission and reception for an input, and is set to drawing, 6 dielectric tubing and 8 for the body of a personal communication device, and 7 The central conductor section of the antenna 2 for a pen-cum-transmission and reception which can be contained, the inside in which the insulating sleeve of the antenna 2 for a pen-cum-transmission and reception which can be contained, and 10 draw a part for the electrical conductivity edge of the antenna 2 for a pen-cum-transmission and reception which can be contained in the Dupleix filter, and, as for 11, 9 draws a signal — a conductor and 12 — a part for the electrical conductivity edge 10 — the inside — it is a conductive flat spring for contacting a conductor 11. The amount of [ 10 ] electrical conductivity edge prevents that an antenna is extended further, when an antenna is lengthened thoroughly. since the connection for the antenna 2 for a pen-cum-transmission and reception which can be contained, and the electrical conductivity edge 10 is a screw type, an antenna lengthens thoroughly — having — a part for the electrical conductivity edge 10 — the inside — when contacted and fixed to a conductor 11, the antenna 2 for a pen-cum-transmission and reception which can be contained can be removed from a part for the electrical conductivity edge 10. a center — the part which becomes the head of a conductor 8, i.e., a nib, consists of construction material which does not have flaw attachment \*\*\*\* in the transparency electric conduction film of the front face of a tablet 1, for example, Duracron.  
[0011] Drawing 3 is the block diagram of the antenna selection section of a transceiver circuit. The signal received with the antenna 2 for a pen-cum-transmission and reception which can be contained, and the fixed antenna 5 for transmission and reception is amplified via the Dupleix filter in amplifying circuits 12 and 13, respectively. In changeover switch (receive section) 14a which is the 1st circuit changing switch, the one where the level of the output of these amplifying circuits 12 and 13 is higher is chosen with an external-control signal. In order to choose the antenna which also chose the transmitting side by the receiving side by changeover switch (transmitting side) 14b which is the 2nd circuit changing switch at this time, even when the antenna 2 for a pen-cum-transmission and reception which can be contained is removed, the receiving level in the direction of the antenna 2 for a pen-cum-transmission and reception which can be contained falls, and since the antenna changeover switches 14a and 14b choose the fixed antenna 5, they can be transmitted and received.

[0012] According to the gestalt of this operation, an antenna and an input pen can be made to serve a double purpose, and the cutback of the number of components, the miniaturization of a case, and loss of an input pen can be prevented. Moreover, even when the antenna 2 for a pen-cum-transmission and reception which can be contained is removed, it can transmit and receive by choosing the fixed antenna 5.

[0013] Although the gestalt 1 of gestalt 2, implementation of operation explained the case of an external antenna as a fixed antenna 5, as shown in drawing 4, a fixed antenna may be for example, a reverse F antenna with built-in equipment. Since it can receive both a vertical wave and a level wave by high interest profit, while the user is removing and operating the antenna 2 for an input which can be contained [ a pen-cum- ], even if a reverse F antenna is level in this personal communication device, it can perform good transmission and reception.

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**DESCRIPTION OF DRAWINGS**

[Brief Description of the Drawings]

[Drawing 1] It is the external view of the personal communication device by the gestalt 1 of implementation of this invention.

[Drawing 2] It is the sectional view of the antenna in the personal communication device by the gestalt 1 of implementation of this invention which can be contained.

[Drawing 3] It is the block diagram of the antenna selection section of the transceiver circuit in the personal communication device by the gestalt 1 of implementation of this invention.

[Drawing 4] It is the external view of the personal communication device by the gestalt 2 of implementation of this invention.

[Drawing 5] It is the external view of the conventional personal communication device.

[Description of Notations]

1 A tablet, 2 The antenna for pen combination transmission and reception for an input which can be contained, 5 The fixed antenna for transmission and reception, 14a An antenna circuit changing switch (receive section), 14b Antenna circuit changing switch (transmitting section).

[Translation done.]

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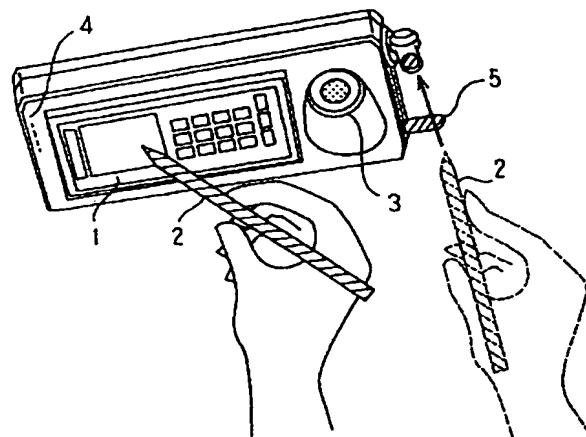
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(54)【発明の名称】 パーソナル通信装置

(57)【要約】

【課題】 アンテナと入力ペンを兼用することができ、部品数の削減、筐体の小型化、および入力ペンの紛失を防ぐことができるパーソナル通信装置を提供すること。

【解決手段】 音声・データを無線で送受信できるパーソナル通信装置において、タブレット1と送受信用の収納可能アンテナ2と、送受信用の固定アンテナ5と、収納可能アンテナ2と固定アンテナ5のいずれかを選択するアンテナ切替スイッチを有し、収納可能アンテナ2がタブレット1へ入力するペンとしても使える構成にした。



1 : タブレット  
2 : 入力用ペン兼用送受信用収納可能アンテナ  
5 : 固定アンテナ

## 【特許請求の範囲】

【請求項1】LCD一体型透明タブレットを備え、音声・データを無線で送受信できるパーソナル通信装置において、

本体の適当な位置に収納可能に設けられ、かつ前記本体から取り外し可能な送受信用の収納可能アンテナを具備し、

前記収納可能アンテナが前記タブレットへ入力するペンとしても使えることを特徴とするパーソナル通信装置。

【請求項2】固定式の送受信用の固定アンテナと、この固定アンテナと収納可能アンテナのいずれかを選択するアンテナ切替スイッチと、を備えたことを特徴とする請求項1記載のパーソナル通信装置。

【請求項3】受信側に設けられ、収納可能アンテナと固定アンテナの增幅回路の出力の高い方を外部制御信号によって選択する第1のアンテナ切替スイッチ(受信部)と、

送信側に設けられ、受信側で選択した前記アンテナを選択する第2のアンテナ切替スイッチ(受信部)と、を備えたことを特徴とする請求項2記載のパーソナル通信装置。

【請求項4】固定アンテナを逆Fアンテナで構成したことを特徴とする請求項2記載のパーソナル通信装置。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】この発明は、音声・データを無線で送受信できるパーソナル通信装置の送受信技術に関するものである。

## 【0002】

【従来の技術】図5は、例えばIBM社から発売された製品である「Simon」の外観図であり、図5において、1はLCD表示面に置かれた入出力一体型透明タブレットで、ペンで操作が可能である。3、4はそれぞれ音声通話用のスピーカとマイクロフォン、15はタブレット入力用のペン、16は送受信用収納可能ホイップアンテナである。前記送受信用収納可能ホイップアンテナ16は唯一のアンテナであり、常に送受信に使用される。前記送受信用収納可能ホイップアンテナ15は伸長位置にしたほうが受信感度が高く、送信効率が高い。また、前記送受信用収納可能ホイップアンテナ16の下端にはストッパーがあり、アンテナが完全に伸長されたときにさらなる伸長を防止している。使用者は付属のペン15でタブレット1にタッチすることで、データの入力や編集及び指示を行う。

## 【0003】

【発明が解決しようとする課題】従来のパーソナル通信装置は、以上のように構成されているので、アンテナ16及びペン15という長尺物の収納スペースが別個に必要となる上、ペン15を紛失する可能性が高いという問題点があった。

【0004】この発明は上記のような問題点を解決するためになされたものであって、アンテナとペンを兼用できるパーソナル通信装置を提供することを目的とする。

## 【0005】

【課題を解決するための手段】請求項1の発明に係るパーソナル通信装置は、LCD一体型透明タブレットを備え、音声・データを無線で送受信できるパーソナル通信装置において、本体の適当な位置に収納可能に設けられ、かつ本体から取り外し可能な送受信用の収納可能アンテナを具備し、収納可能アンテナがタブレットへ入力するペンとしても使えることを特徴とする。

【0006】請求項2の発明に係るパーソナル通信装置は、請求項1記載のパーソナル通信装置において、固定式の送受信用の固定アンテナと、この固定アンテナと収納可能アンテナのいずれかを選択するアンテナ切替スイッチとを備えたことを特徴とする。

【0007】請求項3の発明に係るパーソナル通信装置は、請求項2記載のパーソナル通信装置において、受信側に設けられ、収納可能アンテナと固定アンテナの増幅回路の出力の高い方を外部制御信号によって選択する第1のアンテナ切替スイッチ(受信部)と、送信側に設けられ、受信側で選択した前記アンテナを選択する第2のアンテナ切替スイッチ(受信部)とを備えたことを特徴とする。

【0008】請求項4の発明に係るパーソナル通信装置は、請求項2記載のパーソナル通信装置において、固定アンテナを逆Fアンテナで構成したことを特徴とする。

## 【0009】

## 【発明の実施の形態】

30 実施の形態1. 以下、この発明の実施の形態1を図について説明する。図1において、1はLCD表示面に置かれた入出力一体型透明タブレットで、2は入力用ペン兼送受信用収納可能アンテナ、3、4はそれぞれ音声通話用のスピーカとマイクロフォン、5は送受信用固定アンテナである。

【0010】図2は、前記入力用ペン兼送受信用収納可能アンテナ2付近の構造図(断面図)であり、図において、6はパーソナル通信装置本体、7は誘電管、8はペン兼送受信用収納可能アンテナ2の中心導体部、9はペン兼送受信用収納可能アンテナ2の絶縁スリーブ、10はペン兼送受信用収納可能アンテナ2の電気伝導性端部分、11はデュプレクスフィルタへ信号を引き込む内側導体、12は電気伝導性端部分10が内側導体11に接触するための伝導性板バネである。電気伝導性端部分10はアンテナが完全に伸ばされた時、さらにアンテナが伸びる事を防止する。ペン兼送受信用収納可能アンテナ2と電気伝導性端部分10との接続部はネジ式になっているので、アンテナが完全に伸ばされて電気伝導性端部分10が内側導体11に接触し固定されるとき、ペン兼送受信用収納可能アンテナ2は電気伝導性端部分10か

ら取り外すことができるようになっている。中央導体8の先端、つまりペン先になる部分は、タブレット1の表面の透明導電フィルムをきず付ける事がないような材質、例えばジュラコンで構成されている。

【0011】図3は送受信回路のアンテナ選択部のブロック図である。ペン兼送受信用収納可能アンテナ2、送受信用固定アンテナ5で受信された信号は、それぞれデュプレクスフィルタを経由し、增幅回路12、13で増幅される。第1の切替スイッチである切り替えスイッチ(受信部)14aではこの増幅回路12、13の出力のレベルの高い方を、外部制御信号によって選択する。このとき、送信側も受信側で選択したアンテナを第2の切替スイッチである切り替えスイッチ(送信側)14bによって選択するため、ペン兼送受信用収納可能アンテナ2が取り外された場合でも、ペン兼送受信用収納可能アンテナ2の方の受信レベルが下がりアンテナ切り替えスイッチ14a、14bは固定アンテナ5を選択するため、送受信が可能である。

【0012】この実施の形態によれば、アンテナと入力ペンを兼用することができ、部品数の削減、筐体の小型化、および入力ペンの紛失を防ぐことができる。また、ペン兼送受信用収納可能アンテナ2が取り外された場合でも、固定アンテナ5を選択することにより送受信が可能である。

【0013】実施の形態2、実施の形態1では、固定アンテナ5として外部アンテナの場合について説明したが、図4に示すように固定アンテナは装置内蔵の、例え\*

\*ば逆Fアンテナであってもよい。逆Fアンテナは垂直波・水平波両方を高利得で受信できるため、ユーザが入力用ペン兼収納可能アンテナ2を取り外して操作しているときにこのパーソナル通信装置を水平にしても良好な送受信を行うことができる。

#### 【0014】

【発明の効果】この発明におけるパーソナル通信装置は、アンテナと入力用のペンを兼用させることによって部品数を削減でき、同時に筐体の小型化が図れる。また、入力用のペンの紛失を防ぐ効果がある。

#### 【図面の簡単な説明】

【図1】この発明の実施の形態1によるパーソナル通信装置の外観図である。

【図2】この発明の実施の形態1によるパーソナル通信装置における収納可能アンテナの断面図である。

【図3】この発明の実施の形態1によるパーソナル通信装置における送受信回路のアンテナ選択部のブロック図である。

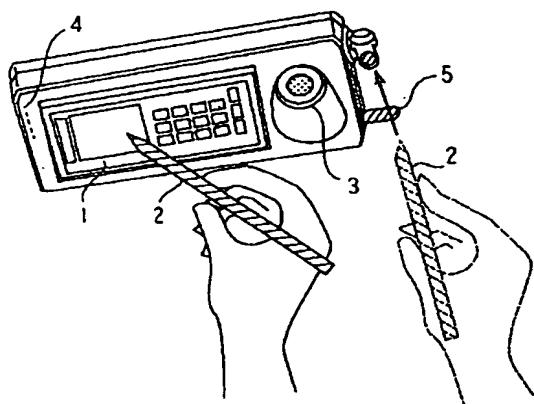
【図4】この発明の実施の形態2によるパーソナル通信装置の外観図である。

【図5】従来のパーソナル通信装置の外観図である。

#### 【符号の説明】

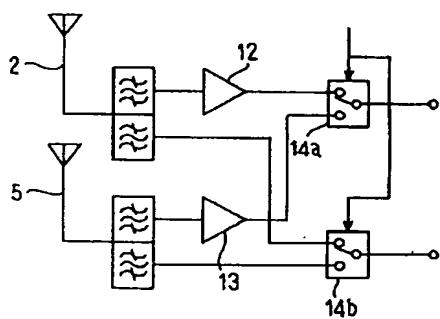
1 タブレット、2 入力用ペン兼用送受信用収納可能アンテナ、5 送受信用固定アンテナ、14a アンテナ切替スイッチ(受信部)、14b アンテナ切替スイッチ(送信部)。

【図1】



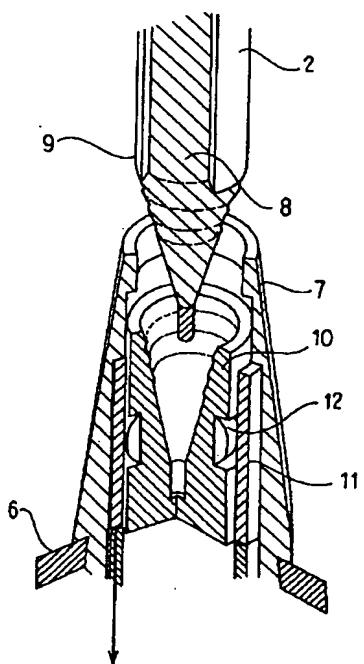
- 1 : タブレット
- 2 : 入力用ペン兼用送受信用収納可能アンテナ
- 5 : 固定アンテナ

【図3】



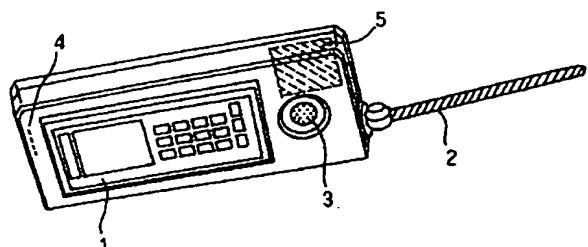
14a : アンテナ切替スイッチ(受信部)  
14b : アンテナ切替スイッチ(送信部)

【図2】



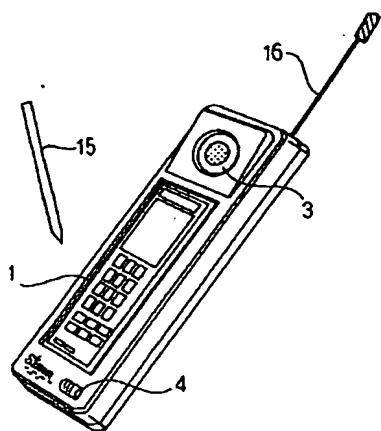
デュプレクスフィルタへ

【図4】



5: 固定アンテナ(逆Fアンテナ)

【図5】



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